

**Staff
Summary
Report**



To: Mayor & City Council
Through: City Manager

Agenda Item Number 21
Meeting Date June 20, 2002

SUBJECT: Award of Purchase of Extended Range Reflectorless Robotic Total Station

PREPARED BY: Lisa Goodman, Procurement Officer, 480-350-8533

REVIEWED BY: Ron Gauthier, CPPO, Central Services Administrator, 480-350-8405

BRIEF: Request to award a contract for an extended range reflectorless robotic total station.

COMMENTS: **Purchases (1004-01)** Request to award a sole source purchase of an extended range reflectorless robotic total station for the Tempe Public Works Department to Surveyors Service Company in the amount of \$41,048.22, which includes applicable taxes.

Document Name: (20020620fslg01) Supporting Documents: Yes

SUMMARY: **Historical background**

The current total station is over 12 years old and uses old technology. The major concerns with this instrument are the limitation of data storage capacity, the lack of availability of program enhancements and its durability and ruggedness. This instrument is used for data collection for design and the staking of many City projects and the verification of data for mapping and monitoring of field elevations.

The new instrument is essential for the monitoring of the dams on the Rio Salado Town Lake as required by the Arizona Department of Water Resources. This monitoring is required to be conducted quarterly to verify the safety of the dams.

The new instrument has servomotors that enable the instrument to be operated remotely by a radio contact with the rod person, thus freeing up the instrument person to help in the staking of certain projects, or the location of topographic features in pre-design surveys.

Due to the reflectorless distance measuring capability of the proposed new instrument, the survey crew will spend less time in the City streets resulting in greater efficiency and increased safety.

Evaluation Process

After extensive research it has been determined that only one robotic total station (model TCRA1102plus) exists capable of automatically sighting any glass reflector; other models can only sight glass prisms with a proprietary transponder attached. The glass reflectors presently in the dam structure are unable to be retrofitted with the proprietary transponders.

In addition, the TCRA1102plus has a patented feature called automatic target recognition (ATR) which allows us to sight and turn angles repetitiously without a person actually sighting the target. This feature will allow Public Works to monitor the dam more accurately and more quickly.

FISCAL NOTE: Sufficient funds have been appropriated in Fund 51000 Project No. 996797.

RECOMMENDATION: It is recommended that the City Council award the purchase of an extended range reflectorless robotic total station to Surveyors Service Company in the amount of \$41,048.22, which includes applicable taxes.

Approved by: Lisa Goodman
Procurement Officer

Glenn Kephart
Public Works Manager

Memorandum



TO: Ron Gauthier, CPPFO
Central Services Manager

FM:

Glenn Kephart
Name of Department Head (Director/Chief)

5/14/02
Date

Public Works
Name of Department

SUBJECT: Sole Source Determination

As Head of the City Department for which the needed item(s) will be purchased, I have made a determination that only one (1) reasonable and practicable source exists to supply the required material. As such, I am authorizing the City Procurement Office to work with my Department to negotiate an acceptable contract with:

SURVEYORS SERVICE COMPANY
Name of Supplier

Description of Item(s) to be purchased:

Refer to Requisition No. 42235, dated 5/15/02 which has been transmitted to the City Procurement Office to initiate this Sole Source purchase.

My (customer) department contact for this purchase is J. R. POOLER at Ext. 8412.

My Sole Source determination is based upon extensive research conducted by my department as to possible suppliers for this need and a written justification is attached for City Procurement Office records.

As related to this purchase, there are no conflicts of interest, legal, ethical or preference issues which would compromise my (customer) department or this acquisition.

Department Head's Signature

John D. Good for Glenn Kephart Date 5/16/02

City Procurement Ordinance 97.55, Sec. 26A-12 identifies the basis for a sole source procurement as follows:

"A purchase may be made or contract awarded by the procurement office without competition when the using department director determines in writing, after conducting a good faith review of available sources, that there is only one reasonable and practicable source for the required material or service. The using department requesting the sole source procurement shall provide written evidence to support a sole source determination. The procurement officer will participate with the using department in the conduct of negotiations, as appropriate, to price, delivery and terms. The procurement officer may require the submission of cost or pricing data in connection with a purchase or award under this section. Sole source procurement shall be avoided, except when no reasonable alternative sources exist. A record of sole source procurements shall be maintained as a public record."

The Leica TCRA1102plus and its supporting software and hardware are uniquely suited for some of the reoccurring tasks the survey crew must perform for the City. Specifically, the Town Lake upstream dam deformation survey requires that we carefully measure angles and distances to previously imbedded glass reflector in the piers of the dam.

The TCRA1102 plus is the only robotic total station to be able to automatically sight any glass reflector; other models can only sight glass prisms with a proprietary transponder attached. Since our glass reflectors are already in the dam structure and cannot be replaced, transponders cannot be retrofitted to them. The TCRA1102plus has a patented feature called automatic target recognition (ATR) which allows us to sight and turn angles repetitiously without a person actually sighting the target, and will recognize our reflectors. This feature alone will allow us to monitor the dam more accurately and more quickly. Not to put too fine a point on it, but ATR acts like a human in that it independently sights and turns angles between points each time.

The TCRA1102plus has an extremely narrow visible laser bundle for measuring in the reflectorless mode. What this means is that we can get very accurate measurements to a target (3mm) without the use of a glass prism. I anticipate the use of this feature for the dam monitoring also in that we will begin to take measurements to the corners of the piers of the dam as insurance against the loss of a reflector in the piers due to the drying of the epoxy, weathering and (believe it or not) build up of spider webbing. In addition, it will help us locate features which may violate our City code, but which we cannot get close to due to hostile owners. Finally, it will allow accurate measurements in heavy traffic without any survey crewmembers involved, thus reducing risk.

The TCRA1102plus is the lightest RPU made. That feature will allow us to use it like our current, but aged, total station. It actually weighs slightly less than our total station, so it can be used as a replacement for that. Other models are more cumbersome and have more cables involved with their radios and power supply to the instrument. This lightness and simplicity will make for less snagging by the crewmembers, and less effort taking the instrument up slopes, etc.



Surveyors Service Company

Surveying & Construction Product Specialists

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Tuesday, May 14, 2002

James Cristea
City of Tempe, Engineering Division
Tempe, Arizona

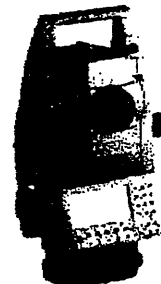
Dear James:

Surveyors Service Company and I would like to thank you for your interest in the Leica TPS series instrument. As per our conversation, I have put together the following quote on the Leica TCRA1102plus (2") Extended Range Reflectorless Robotic Total Station for your review.

REQUISITION # 42235REC'D (OK TO PAY) M

SUPERVISOR _____

DATE _____



Part #	Part Description	Price
723327x	TCRA1102plus (2") Extended range reflectorless automatic target recognition total station w/ 1 keyboard, laser plummet, carrying case containing : screwdriver, shade, adjusting pins, hex key, plastic hood and rain cover	26,040
	TPS1100 User Manual, English	
	TPS1100 Reference Manual, English	
	TPS1100 Quick Guide, English	
	CD-ROM TPS User Documentation	
	GDF121 PRO Tribrach, w/o plummet, Green	
	GEB121, 3.6Ah 6V Camcorder NiMH battery, for SR500, RCS1100, TPS1100	
	GKL111-1, 120V, 50/60 Hz, Charger for one GEB111, 121,	
	RS-232 Data transfer cable, 9-pin(F, computer), lemo-0 connectors, 2m.	
667173	RCS1100 Controller, with integrated radio modem & antenna	4,730
721986	GHT32 Holder for RCS1100 on pole	190
667368	GVP607 Softbag for RCS1100	80
710526	User Manual, RCS1100, English	
663288	TCPS26B base radio modem, with antenna, software diskette and carrier	1,250
707135	Y-cable, short, connecting TCPS26 and external battery GEB70/71	150
707525	GK1 Lemo/Canon converter plug, Lemo 0 - RS232 adapter	100
667318	GEB111 BASIC Plug-in battery, 1.8Ah, 6V Camcorder NiMH battery X2	140
724297	Container for RCS1100/TCPS26/Cables/GEB70/GEB71	340
667730	Charger, GKL122-1, 115 V, 50/60Hz, charges/discharges two batteries	425
409667	GEB 71 External Battery	590
639985	360 degree prism	990
667334	TPS On-board Monitoring	600
667301	Leica GTS120 Wood Tripod	350
004512s	12' Prism Pole	201
714175	On-board TDS-PRO software	1,695
TST-8	3 Days of on-site training	2,100
	Total	\$39,971
	Less 5% Discount	\$37,972.45
	Total plus 8.1% Tax	\$41,048.22

Quote is valid until June 28, 2002.



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As always, Servco will be there to support you should the need arise. Surveyors Service Company is a service company first, and we will do everything possible to assist your firm in being as productive as possible. You are a valued customer, and we hope to become your instrument supplier. Please call me with any questions about the instrument's specifications or pricing, and I look forward to earning your business.

At your service,

Nick Coumoyer
Geodesy Representative
Surveyors Service Company

